

## Environmental variability of the Japan Sea clarified by

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Environmental variability of the Japan Sea was presumed using MD179 Cruise 3312 sediment core by inorganic and organic geochemical analysis. Analysis of this study went focusing on mainly thin-laminated dark layer (TL-1 to 3). TOC was about 0.8% in TL-2 and 3, on the other hand, the TL-1 layer showed nearly 2%. In the central part of TL-2 to the upper part, all the samples of a C/S ratio are 1 or less. This has suggested strong reduction environment at the upper part of TL-2 layer.

The Pristane/Phytane ratio (Pr/Ph ratio) traditionally used as an oxidation-reduction index is shown that most analysis data are <3.0 and it was the reductive environment. Pentamethylcosane (PMI) which is the membrane lipid origin of the anaerobic methanotrophic archaea (ANME), C18-isoprenoid ketone characteristically detected to a cold-seep carbonate and hop-22 (29) ene (diploptene) also the origin were not clear, characteristically found out at a methane seeping point, those depth distribution was plotted and considered. Distribution of the AMNE marker in the inside of TL layers is heterogeneous, and the possibility of the sudden methane eruptions during the TL-2 deposition was suggested.

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Keywords: Japan Sea, biomarker, TL layer, sulfur isotope composition, anoxic environment, C/S ratio